Listing of Claims:

1. (Currently Amended) An image processing unit which comprises:

an input for the signal of a current image of a body volume, the body volume being subject to a motion comprising several phases of motion;

at least one input for a signal which represents the phase of motion of the body volume which belongs to the current image;

a memory in which previous images of the body volume are stored together with the associated phases of motion; and

a controller for:

calculation of a similarity measure between the current image and a representative image, the similarity measure being associated with the phase of motion;

calculation of the similarity measure between the representative image and the previous images or a sub-quantity thereof; and

selection of those previous images whose similarity measure relative to the representative image lies in a predetermined range around the similarity measure of the current image relative to the representative image,

the image processing unit being arranged to associate with the current image that previous image from among the previous images whose phase of motion is closest to the phase of motion of the current image.

2. (Original) An image processing unit as claimed in claim 1, which is arranged to determine a distance between the phases of motion of the current image and an associated previous image and/or the time elapsed since the last association and to reproduce said distance for a user.

3. (Original) An image processing unit as claimed in claim 1, wherein the body volume is a biological body volume and the motion of the body volume is caused by heartbeat and/or respiration, and that the phase of motion is detected by means of an electrocardiogram and/or by the signal from a respiration sensor.

4. (Currently Amended) An image processing unit as claimed in claim 1, wherein the controller utilizes an extreme of a motion cycle of the body for the representative image ~~which is arranged to carry out the following steps:~~

~~calculation of a similarity measure between the current image and a representative image;~~

~~calculation of the similarity measures between the representative image and the previous images or a sub-quantity thereof; and~~

~~selection of those previous images whose similarity measure relative to the representative image lies in a predetermined range around the similarity measure of the current image relative to the representative image~~.

5. (Currently Amended) An image processing unit as claimed in claim 1, which is arranged to carry out the following steps:

~~calculation of the similarity measures between the current image and the previous images or a sub-quantity thereof; and~~

selection of those previous images whose similarity to the current image exceeds a predetermined threshold value.

6. (Original) An image processing unit as claimed in claim 1, wherein together with each previous image there are stored the associated electrocardiogram and the relative instant of the image acquisition, and that the image processing unit is arranged to carry out the following steps:

determination of a transformation which maps the electrocardiograms of the current image and a previous image one onto the other; and

determination of the relative position of the phase of motion of the current image and the previous image, as expressed in the electrocardiogram, by means of the transformation.

7. (Original) An image processing unit as claimed in claim 1, which is arranged to carry out a motion correction for a motion of the entire body volume between the current image and the associated previous image.

8. (Original) An image processing unit as claimed in claim 1, wherein said image processing unit is coupled to a reproduction unit and is arranged to reproduce the current image and the associated previous image in superposed form on the reproduction unit.

9. (Currently Amended) A method of associating a current image of a body volume which is subject to a motion comprising different phases of motion with one of several previous images of the body volume, in which method comprises the steps of:

determining the phase of motion ~~is determined~~ together with obtaining a set of relevant images; ~~and~~

calculating a similarity measure between the current image and a representative image, the similarity measure being associated with the phase of motion;

calculating the similarity measure between the representative image and the previous images or a sub-quantity thereof; and

selecting those previous images whose similarity measure relative to the representative image lies in a predetermined range around the similarity measure of the current image relative to the representative image, wherein the current image is associated with that one of the previous images which has a phase of motion ~~is~~ closest to the phase of motion of the current image.

10. (Currently Amended) A method as claimed in claim 9, comprising determining at least one of ~~whereina~~ distance between the phases of motion of the current image and the associated previous image, and/~~or~~ ~~thea~~ time elapsed since the last association is determined and reproduced for the user.

11. (Currently Amended) An imaging device comprising:

a controller for obtaining a current image of a body volume and a phase of motion of the body volume which belongs to the current image, the body volume being subject to a motion comprising cardiac and respiratory motion; and

a memory in which previous images of the body volume are stored together with associated phases of motion,

wherein the controller calculates first and second similarity measurements between the current image and the previous images, the first similarity measurement being associated with a phase of one of the cardiac or respiratory motions, the second similarity measurement being associated with a phase of the other of the cardiac or respiratory motions,

wherein the controller selects a first sub-quantity of the previous images based on the first similarity measurement, and

wherein the controller selects an image from the first sub-quantity based on the second similarity measurement

~~unit for associating a current image of a body volume which is subject to motion comprising different phases of motion with one of a plurality of previous images of the body volume comprising:~~

~~a means for determining the phase of motion together with a set of relevant images; and~~

~~a means for associating the current image with one of the previous images which has a phase of motion closest to the phase of motion of the current image~~.

12. (Currently Amended) The ~~unit~~ device of claim 11, wherein the controller ~~further comprising a means for~~ determi~~nges~~ at least one of a distance between the phases of motion of the current image and the associated previous image, and~~/or the~~ an elapsed time since the last association.

13. (New) The device of claim 11, wherein at least one of the first and second similarity measurements are performed on both the current and previous images using a representative image.

14. (New) The device of claim 11, wherein the first and second similarity measurements comprise pixel subtraction between images to be compared.

15. (New) The device of claim 11, wherein the controller performs motion correction for a motion of the entire body volume between the current image and the associated previous image.

16. (New) The device of claim 11, further comprising a monitor that displays the current images superimposed with the selected image from the first sub-quantity of the previous images.

17. (New) The device of claim 11, wherein at least a portion of the previous images are obtained from an ultrasound process, magnetic resonance imaging and scintigraphy.

18. (New) The device of claim 17, wherein the current image is obtained using x-ray imaging.

19. (New) The device of claim 11, wherein the representative image is from an extreme of a cardiac or respiratory motion cycle.

20. (New) The method of claim 9, further comprising associating a point in a two dimensional parameter plane with each of the previous images, wherein the association is based on mapping of both a cardiac cycle and a respiratory cycle of the body volume.